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10/816,781	04/02/2004	Sirikiat L. Ariyavisitakul	TI-36888AA	9966

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EXAMINER	
SINGH, HIRDEPAL	

ART UNIT	PAPER NUMBER
2611	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/816,781	ARIYAVISITAKUL ET AL.	
	Examiner	Art Unit	
	HIRDEPAL SINGH	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 December 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to the amendment filed on December 24, 2007. Claims 1-39 are pending and have been considered below.

Response to Arguments

2. Amendment filed on December 24, 2007 properly addressed and corrected the claim objections. Therefore, the objection is withdrawn.

3. Amendment has not properly addressed the Double patenting rejection made in the previous office action. Therefore, the rejection is upheld.

4. Applicant's arguments with respect to claims 1-39 have been considered but are moot in view of the new ground(s) of rejection.

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 1 and 20 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 26 of U.S. Patent No. 7,248,849. Although the conflicting claims are not identical, they are not patentably distinct from each other because Claims 1 and 26 of the U.S. Patent No. 7,248,849 claims all of the limitations set forth in the instant claims 1 and 20 of the present Application 10/816,781.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1, 3, 10-11, 20, 22, 29-30 and 36 are rejected under 35 U.S.C. 102(e) as being anticipated by Manickam et al. (US 7,254,198).

Regarding Claims 1 and 20:

Manickam discloses prefilters (207 in figure 2a) in a receiver having at least two input branches (figure 5b), the input branches receiving branch-specific signals transmitted across communications channels (Figure 6a), each branch-specific signal

containing data from a target transmitter (221 in figure 2a) and possibly also interference (col. 2, lines 12-18), the method comprising:

determining a frequency response of a conditioned channel that suppresses the interference (col.6, lines 33-48), wherein the frequency response is determined without reference to the branch-specific prefilters (col.7, lines 6-20); and

computing frequency responses of the branch-specific prefilters from the frequency response of the conditioned channel(Col. 7, lines 14-30, the frequency response of prefilter represented by H_{PF} calculated from response of channel; equation 8; column 11, lines 56-61).

Regarding Claims 3 and 22:

Manickam discloses all of the subject matter as described above, and further discloses determining an impulse response (column 19, lines 18-25 and 40-50) of the conditioned channel without reference to the branch-specific prefilters (Col. 7, lines 14-20), and transforming the impulse response of the conditioned channel to obtain the frequency response of the conditioned channel (Col. 12, lines 1-10).

Regarding Claims 10 and 29:

Manickam discloses all of the subject matter as described above, and further discloses a delay spread of the conditioned channel is one symbol duration (Col. 12, lines 1-10).

Regarding Claims 11 and 30:

Manickam discloses all of the subject matter as described above, and further discloses conditioned channel has a delay spread that is shorter than a delay spread of

the effective communications channels from the target transmitter to the input branches (Col. 15, lines 12-18).

Regarding Claim 36:

Manickam discloses all of the subject matter as described above, and further discloses a front-end with at least two input branches (figure 6a).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 2, 4-9, 12-19, 21, 23-28, 31-35 and 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manickam et al. (US 7,254,198) in view of Dent (US Patent no. 6,996,380).

Regarding Claims 2 and 21:

Manickam disclose all of the subject matter as described above, except for specifically teaching determining the frequency response of the conditioned channel, assuming lengths of the branch-specific prefilters are infinite.

However, Dent in the same field of endeavor discloses a communication system determining the frequency response of the conditioned channel, assuming lengths of the branch-specific prefilters are infinite (30A, 30B, 30N in Figure 2, Col. 3, lines 54- 67,

Col. 4, lines 1-10, Col. 27, lines 15-18, Col. 32, lines 10-18, Col. 16, lines 13-20,and lines 39-45, where the prefilters 30 are Infinite impulse Response (IIR) filters).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the system of Dent applied for the communication system irrespective of transmitter or receiver, as to a person of ordinary skill in the art the teachings are implemented for the transmitter are also applicable for the receiver and vice versa, determining the frequency response of the conditioned channel, assuming prefilters are infinite in order to use the filter characteristic based on the determinant of the channel estimate that provides Inter-Symbol Interference cancellation within the desired information signals received by the receivers.

Regarding Claims 4 and 23:

Manickam discloses all of the subject matter as described above, except for specifically teaching determining the conditioned channel as a linear predictive filter of a residual error between, an original signal before transmission across the communications channels between, a composite signal that combines the branch-specific received signals after transmission across the communications channels as filtered by a branch-specific equalizer, wherein the branch-specific equalizers collectively comprise an optimum space-time linear equalizer.

However, Dent in the same field of endeavor discloses a communication system, with macro diversity system includes that includes receiver and transmitter and the diversity in the system implemented by conditioned channel as a linear predictive filter of a residual error between, an original signal before transmission across the

communications channels (Col. 12, lines 53-59, Col. 18, lines 1- 6, Col. 21, lines 8-67, Col. 27, lines 10-24, Col. 29, lines 45-53, Col. 12, lines 5-11, Col. 8, lines 48-50), and a composite signal that combines the branch-specific received signals after transmission across the communications channels as filtered by a branch-specific equalizer, wherein the branch-specific equalizers collectively comprise an optimum space-time linear equalizer (Col. 9, lines 26-43, Col. 11, lines 11- 41, Col. 13, lines 1-3, Col. 14, lines 4-17, Col. 16, lines 39-45, Col. 17, lines 20-23, Col. 20, lines 1-28, Col. 23, lines 50-64, Col. 31, lines 20-25, Col. 34, lines 28-34).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the system of Dent applied for the communication system irrespective of transmitter or receiver, as to a person of ordinary skill in the art the teachings are implemented for the transmitter are also applicable for the receiver and vice versa, determining conditioned channel as linear predictive filter as residual error between original signal and composite signal after combination at receiver for receiving branch-specific signals transmitted across communications channels for the purpose of minimizing interference by using the branch specific prefilters that advantageously helps minimizing the fading effect.

Regarding Claims 5 and 24:

Manickam discloses all of the subject matter as described above, except for specifically teaching determining frequency responses of the communications channels from the transmitters to the input branches; a first computational module for computing a frequency-dependent SNIR from the frequency responses of the communications

channels; an inverse FFT for inverse transforming a function of the frequency-dependent SNR to obtain an autocorrelation function;); a second computational module for computing an impulse response of the conditioned channel from the autocorrelation function; second FFT for transforming the impulse response of the conditioned channel to obtain the frequency response of the conditioned channel.

Dent in the same field of endeavor discloses a communication system where a module for determining frequency responses of the communications channels from the transmitters to the input branches (Col. 18, lines 17-22, Col. 4, lines 11-21, Col. 14, lines 4-17, lines 37-56); a first computational module for computing a frequency-dependent SNIR from the frequency responses of the communications channels (Col. 16, lines 30- 38, Col. 13, lines 43-55); an inverse FFT for inverse transforming a function of the frequency-dependent SNR to obtain an autocorrelation function (Col. 14, lines 37-56, particularly lines 50- 55, Col. 16, lines 1-12, Col. 4, lines 2-10, Col. 7, lines 38-67, Col. 8, lines 1-31, Col. 9, lines 15-21); a second computational module for computing an impulse response of the conditioned channel from the autocorrelation function (Col. 34, lines 41-52, Col. 3, lines 54-67, Col. 9, lines 1-10, lines 35-51, Col. 10, lines 51-56, Col. 15, lines 41-56, Col. 16, lines 39-45, Col. 23, lines 56-60); and a second FFT for transforming the impulse response of the conditioned channel to obtain the frequency response of the conditioned channel (Col. 15, lines 41-56, lines 35-51, Col. 10, lines 51- 56, Col. 16, lines 39-45, Col. 23, lines 56-60).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the system of Dent applied for the communication system

irrespective of transmitter or receiver, as to a person of ordinary skill in the art the teachings are implemented for the transmitter are also applicable for the receiver and vice versa, determining conditioned channel as linear predictive filter as residual error between original signal and composite signal after combination at receiver for receiving branch-specific signals transmitted across communications channels for the purpose of minimizing interference by using the branch specific prefilters that advantageously helps minimizing the fading effect.

Regarding Claims 6 and 25:

Manickam discloses all of the subject matter as described above, except for specifically teaching a calculation module for calculating a noise-plus-interference correlation matrix that estimates correlation of interference plus noise; and a computational module for computing the frequency-dependent SNIR from the noise-plus-interference correlation matrix and the frequency responses of the communications channels from the target transmitter to the input branches.

Dent discloses the first computational module comprises: a calculation module for calculating a noise-plus-interference correlation matrix that estimates correlation of interference plus noise (col. 3, lines 32-42, col. 4, lines 11-16, col. 27, lines 41-45, col. 28, lines 45-55, col. 29, lines 45-52); and a computational module for computing the frequency-dependent SNIR from the noise-plus-interference correlation matrix and the frequency responses of the communications channels from the target transmitter to the input branches (col. 14, lines 40-48, col. 18, lines 17-25).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the system of Dent applied for the communication system irrespective of transmitter or receiver, as to a person of ordinary skill in the art the teachings are implemented for the transmitter are also applicable for the receiver and vice versa, determining conditioned channel as linear predictive filter as residual error between original signal and composite signal after combination at receiver for receiving branch-specific signals transmitted across communications channels for the purpose of minimizing interference by using the branch specific prefilters that advantageously helps minimizing the fading effect.

Regarding Claims 7 and 26:

Manickam discloses all of the subject matter as described above, except for specifically teaching the second module computes the frequency responses of the branch-specific prefilters from the frequency response of the conditioned channel and the frequency responses of the communications channels in order to optimize a preselected performance metric.

Dent discloses all of the subject matter as described above, and further discloses the second module computes the frequency responses of the branch-specific prefilters from the frequency response of the conditioned channel and the frequency responses of the communications channels in order to optimize a preselected performance metric (Col. 13, lines 4-14, Col. 17, lines 53-58, Col. 18, lines 7-16, Col.14, lines 37-62, Col. 18, lines 17-40).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the system of Dent for frequency responses of the branch-specific prefilters from the frequency response of the conditioned channel and the frequency responses of the communications channels in order to optimize a preselected performance metric.

Regarding Claims 8 and 27:

Manickam discloses all of the subject matter as described above, except for specifically teaching a calculation module for calculating a noise-plus-interference correlation matrix that estimates correlation of interference plus noise; and a computational module for computing the frequency responses of the branch-specific prefilters from the noise-plus-interference correlation matrix, the frequency response of the conditioned channel and the frequency responses of the communications channels from the target transmitter to the input branches.

Dent discloses all of the subject matter as described above, and further discloses second module comprises a calculation module for calculating a noise-plus-interference correlation matrix that estimates correlation of interference plus noise (col. 17, lines 1-15, col. 3, lines 32-42, col. 4, lines 11-16, col. 27, lines 41-45, col. 28, lines 45-55, col. 29, lines 45-52), and a computational module for computing the frequency responses of the branch-specific prefilters from the noise-plus-interference correlation matrix, the frequency response of the conditioned channel and the frequency responses of the communications channels from the target transmitter to the input branches (col. 14, lines 40-48, col. 18, lines 17-25).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the system of Dent for calculating a noise-plus-interference correlation matrix of interference plus noise and computing the frequency responses of the prefilters from the noise-plus-interference correlation matrix, the frequency response of the conditioned channel and the frequency responses of the communications channels in order to optimize a preselected performance metric.

Regarding Claims 9 and 28:

Manickam discloses all of the subject matter as described above, and further discloses determining the frequency response of the conditioned channel in a iterative manner (column 8, lines 45-50), except for specifically teaching determining the frequency response of the conditioned channel in a non-iterative manner.

Dent discloses determining the frequency response of the conditioned channel in a non-iterative manner (Col. 18, lines 17-29).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the system of Dent for determining the frequency response of the conditioned channel in a iterative or non-iterative manner as required by the system based on the complexity of the circuitry and the cost for this effect to take place as iterative determination may take time and make sys tem more complex.

Regarding Claims 12 and 31:

Manickam discloses all of the subject matter as described above, except for specifically teaching a sequence estimator coupled to the prefilter modules for combining the prefiltered, branch-specific signals to generate a composite, prefiltered

signal; and further for processing the composite, prefiltered signal to estimate the data from the target transmitter.

Dent discloses a sequence estimator coupled to the prefilter modules for combining the prefiltered, branch-specific signals to generate a composite, prefiltered signal; and further for processing the composite, prefiltered signal to estimate the data from the target transmitter (Col. 34, lines 28-34, Col. 10, lines 40-56, Col. 27, lines 35-44, Col. 28, lines 45-56, Col. 29, lines 13-22).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the system of Dent with a sequence estimator coupled to the prefilter modules for combining the prefiltered, branch-specific signals to generate a composite, prefiltered signal for determining the frequency response of the conditioned channel that minimizes the intersymbol interference and attenuates high frequency echo signals.

Regarding Claims 13 and 32:

Manickam discloses all of the subject matter as described above, and further discloses the sequence estimator comprises a maximum likelihood sequence estimator (Col. 15, lines 35-45).

Regarding Claims 14 and 33:

Manickam discloses all of the subject matter as described above, except for specifically teaching sequence estimator determines a confidence level of the estimate of the data.

Dent discloses that the sequence estimator determines a confidence level of the estimate of the data (Col. 34, lines 28-34, Col. 10, lines 40-56, Col. 27, lines 35-44, Col. 28, lines 45-56, Col. 29, lines 13-22, Col. 9, lines 26-43, Col. 11, lines 11-41, Col. 13, lines 1-3, Col. 14, lines 4-17, Col. 16, lines 39-45, Col. 17, lines 20-23, Col. 20, lines 1-28, Col. 23, lines 50-64, Col. 31, lines 20-25, Col. 34, lines 28-34).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the system of Dent for determining the frequency response of the conditioned channel in a iterative or non-iterative manner as required by the system based on the complexity of the circuitry and the cost for this effect to take place as iterative determination may take time and make sys tem more complex.

Regarding Claims 15 and 34:

Manickam discloses all of the subject matter as described above, except for specifically teaching a decoder coupled to the sequence estimator for decoding the estimate of the data, based in part on the confidence level of the estimate.

Dent discloses all of the subject matter as described above, and further discloses a decoder coupled to the sequence estimator for decoding the estimate of the data, based in part on the confidence level of the estimate (Col. 9, lines 26-42, Col. 26, lines 38-47).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the system of Dent for a decoder coupled to the sequence estimator for decoding the estimate of the data, based in part on the confidence level of

the estimate for optimizing the cost function minimizes the intersymbol interference and attenuates high frequency echo signals.

Regarding Claims 16 and 35:

Manickam discloses all of the subject matter as described above, except for specifically teaching an inverse FFT for inverse transforming the frequency responses of the branch-specific prefilters to obtain branch-specific tap Weights for impulse responses of the prefilters wherein the prefilter modules are coupled to receive the tap weights from input branch.

Dent discloses an inverse FFT for inverse transforming the frequency responses of the branch-specific prefilters to obtain branch-specific tap Weights for impulse responses of the prefilters (Col. 8, lines 18-25), wherein the prefilter modules are coupled to receive the tap weights from input branch (Abstract, Col. 31, lines 26-31).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the system of Dent for a decoder coupled to the sequence estimator for decoding the estimate of the data, based in part on the confidence level of the estimate for optimizing the cost function minimizes the intersymbol interference and attenuates high frequency echo signals.

Regarding Claims 17, 18, 37 and 38:

Manickam discloses all of the subject matter as described above, except for specifically teaching data is transmitted in packets across the communications channels, the communications channels are wireless.

Dent discloses the data is transmitted in packets across the communications channels (Col. 5, lines 22-25), the communications channels are wireless (Col. 1, lines 57-63, Col. 3, lines 11-21, Col. 5, lines 10-37).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the system of Dent for data transfer in packets across the communications channels that are wireless in order to make the system implemental for wide variety of application including wireless and wired communication and using packet communication techniques for sending data to make system applicability and compatibility with maximum techniques and users.

Regarding Claim 19:

Manickam discloses all of the subject matter as described above, except for specifically teaching the interference is generated by transmitters that are located in geographically separated cells from the target transmitter but use a same radio frequency as the target transmitter.

Dent discloses all of the subject matter as described above, and further discloses the interference is generated by transmitters that are located in geographically separated cells from the target transmitter but use a same radio frequency as the target transmitter (col. 1, lines 56-64).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the system of Dent for data transfer in packets across the communications channels that are wireless in order to make the system implemental for wide variety of application including wireless and wired communication and using

packet communication techniques for sending data to make system applicability and compatibility with maximum techniques and users.

11. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Manickam et al. (US 7,254,198) in view of Dent (US Patent no. 6,996,380) as applied to claim 20 above, and further in view of Zangi et al. (US Pub. no. 2002/0176492).

Regarding Claim 39:

Manickam and Dent disclose all of the subject matter as described above, except for specifically teaching the training module and the prefilter module are implemented as circuitry on a single integrated circuit.

However, Zangi, in the same field of endeavor, discloses a receiver wherein the training module and the prefilter module are implemented as circuitry on a single integrated circuit (paragraph 0051).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to implement the training and prefilter modules of the receiver as a single integrated circuit (IC) as taught by Zangi in order to save the device space by placing whole circuitry on the same chip.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HIRDEPAL SINGH whose telephone number is

(571)270-1688. The examiner can normally be reached on Mon-Fri (Alternate Friday Off)8:00AM-5:00PMEST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. S./
Examiner, Art Unit 2611
March 4, 2008
/Shuwang Liu/
Supervisory Patent Examiner, Art Unit 2611